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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/813,923	03/20/2001	Takahiro Yamaguchi	KPO112	1850

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EXAMINER

TRAN, KHANH C

ART UNIT PAPER NUMBER

2631

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/813,923	YAMAGUCHI ET AL.	
	Examiner	Art Unit	
	Khanh Tran	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 March 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 13 is/are rejected.
- 7) ☒ Claim(s) 2-12 and 14-25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07/23/2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>02/04/2005</u> . | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. The Preliminary Amendment filed on 07/23/2001 has been entered. Claims 1-25 are pending in this Office action.

2. The Drawings filed on 07/23/2001 are accepted.

### *Claim Objections*

3. Claim 6 is objected to because of the following informalities for the case when claim 6 depends on claim 2: in line 4, "the clock skew sequence" should be changed to - the difference between the plurality of clock skew sequences --; in line 6, "the clock skew sequence" should be changed to -- said difference between the plurality of clock skew sequences --. Appropriate correction is required.

4. Claim 6 is objected to because of the following informalities for the case when claim 6 depends on claim 3: in line 4, "the clock skew sequence" should be changed to - the difference between the plurality of clock skew sequences --; in line 6, "the clock skew sequence" should be changed to -- said difference between the plurality of clock skew sequences --. Appropriate correction is required.

5. Claim 7 is objected to because of the following informalities for the case when claim 7 depends on claim 6, which in turn depends on claim 2: in line 5, "the clock skew

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sequence" should be changed to -- the difference between the plurality of clock skew sequences --; in line 6, "the clock skew sequence" should be changed to -- said difference between the plurality of clock skew sequences --; in line 7, "the clock skew sequence" should be changed to -- said difference between the plurality of clock skew sequences --. Appropriate correction is required.

6. Claim 7 is objected to because of the following informalities for the case when claim 7 depends on claim 6, which in turn depends on claim 3: in line 5, "the clock skew sequence" should be changed to -- the difference between the plurality of clock skew sequences --; in line 6, "the clock skew sequence" should be changed to -- said difference between the plurality of clock skew sequences --; in line 7, "the clock skew sequence" should be changed to -- said difference between the plurality of clock skew sequences --. Appropriate correction is required.

7. Claim 9 is objected to because of the following informalities for the case when claim 9 depends on claim 8, which in turn depends on claim 1: in line 2, "said" should be changed to -- a --. Appropriate correction is required.

8. Claim 9 is objected to because of the following informalities for the case when claim 9 depends on claim 8, which in turn depends on claim 2: in line 2, "said" should be changed to -- a --. Appropriate correction is required.

9. Claim 9 is objected to because of the following informalities for the case when claim 9 depends on claim 8, which in turn depends on claim 3: in line 2, "said" should be changed to -- a --. Appropriate correction is required.

10. Claim 9 is objected to because of the following informalities for the case when claim 9 depends on claim 8, which in turn depends on claim 4: in line 2, "said" should be changed to -- a --. Appropriate correction is required.

11. Claim 15 is objected to because of the following informalities: in line 3, "assign" should be changed to -- assigning --. Appropriate correction is required.

12. Claim 16 is objected to because of the following informalities: in line 3, "assign" should be changed to -- assigning --. Appropriate correction is required.

13. Claim 21 is objected to because of the following informalities for the case when claim 21 depends on claim 20, which in turn depends on claim 13: in line 2, "said" should be changed to -- a --. Appropriate correction is required.

14. Claim 21 is objected to because of the following informalities for the case when claim 21 depends on claim 20, which in turn depends on claim 14: in line 2, "said" should be changed to -- a --. Appropriate correction is required.

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15. Claim 21 is objected to because of the following informalities for the case when claim 21 depends on claim 20, which in turn depends on claim 15: in line 2, "said" should be changed to -- a --. Appropriate correction is required.

16. Claim 21 is objected to because of the following informalities for the case when claim 21 depends on claim 20, which in turn depends on claim 16: in line 2, "said" should be changed to -- a --. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claims 1 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ravikanth U.S. Patent 6,327,274 B1.

Regarding claim 1, in column 7 line 44 through column 8 line 20, Ravikanth teaches a system for determining a clock skew between first and second clocks in a network comprising means for determining a clock skew between the first and second clocks based on the time stamps and the time measured by the second clock, wherein the clock skew determining means includes:

Means for computing a jitter between the time delay for the one packet and the time delay for a next packet consecutively transmitted after the one

packet. Ravikanth does not expressly teach a timing jitter estimator for estimating timing jitter sequences as set forth in the claim. However, Ravikanth teaches a means for computing a jitter between the time delay for the one packet and the time delay for a next packet consecutively transmitted after the one packet. The clock skew determining means further includes a first averager for averaging jitters after transmitting a plurality of packets. In light of the foregoing teachings, the recited means not only computes a jitter between the time delay for the one packet and the time delay for a next packet consecutively transmitted after the one packet, but also subsequent jitters for the plurality of transmitted packets. Hence, the means as taught by Ravikanth performs the function of the timing jitter estimator specified in the claim. Because the means performs similar function specified in the claim in substantially the same way, and produces substantially the same results as the corresponding timing jitter estimator disclosed in the application claim, a person of ordinary skill in the art would have recognized that the interchangeability of the means as taught by Ravikanth for the corresponding timing jitter estimator specified in the application claim. Furthermore, a plurality of transmitted packets, corresponding to the claimed plurality of clock signal, is inputted to the means for producing jitters as claimed in the application claim.

Ravikanth does not expressly teach a clock skew estimator for calculating a timing difference sequence between those timing jitter sequences as set forth in the application claim. Referring to column 8, lines 5-20, a second averager

averages inter-packet times, each of the inter-packet times being a time interval between transmitting two consecutive of the plurality of packets, wherein the clock skew is determined by dividing an average of the jitters by an average of the inter-packet times. In light of the foregoing teachings, because the second averager performs similar function specified in the claim in substantially the same way, and produces substantially the same results as the corresponding clock skew estimator disclosed in the application claim, a person of ordinary skill in the art would have recognized that the interchangeability of the second averager as taught by Ravikanth for the corresponding clock skew estimator specified in the application claim. Furthermore, a plurality of jitters produced by the means recited above are inputted to the second averager for producing a clock skew sequence as claimed in the application claim.

Regarding claim 13, Ravikanth invention is directed to a method and system for measuring and estimating the relative skew between clocks in a packet based communication networks.

In column 6, lines 35-65, figure 1 illustrates a skew measurement scheme in a packet based communication network 100. Packets 102, each having a time stamp 104, are sent from a source node 106 to a destination node 108 over the network 100. The destination node D108 measures a relative skew between a clock 110 at the source node 106 and a clock 112 at the destination node D 108



by using a stream of consecutive packets from the source node S 106 to the destination node 108.

In column 6, lines 55-67, referring to figure 2, a packet N+1 is received by a receiver in box 200. The receiver obtains the sender time stamp from the packet while recording the receiving time in box 202. A delay  $Del_{N+1,D}$  is determined in box 204. In box 206, a jitter is computed by utilizing two consecutive packets N and N+1, which are sent by the source node S 106 to the destination node D 108, see figure 1. Ravikanth does not expressly teach estimating timing sequences of the respective clock signals under measurement". However, Ravikanth further teaches an average jitter is then computed in box 206. In view of the foregoing teachings, it would have been obvious for one of ordinary skill in the art at the time the invention was made that an average jitter would be representative of the average of a plurality of jitter sequences. As further expressed in column 6, lines 35-45, the destination node D 108 measures a relative skew between a clock 110 at the source node 106 and a clock 112 at the destination node 108 by using a stream of consecutive packets from the source node 106 to the destination node 108. Jitter sequences are then computed for every two consecutive packets N and N+1. In view of the foregoing, the plurality of consecutive packets corresponds to the claimed plurality of clock signals.

Referring back to figure 2, in column 6, lines 57-67, in box 208, an average jitter and an average inter-packet time are computed by averages which

are commonly used by a person skilled in the art. Then, a relative skew  $R_{rel\ S,D}$  between a clock 110 at the source node 106 and a clock 112 at the destination node D 108 is determined in box 210. In light of that computing relative skew  $R_{rel\ S,D}$  between a clock 110 at the source node 106 and a clock 112 at the destination node D 108 corresponds to the claimed step of *"calculating a time difference between the plurality of timing sequences to estimate a clock skew sequence"*.

### ***Allowable Subject Matter***

18. Claims 2-12 and 14-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Soma et al. U.S. Patent 6,795,496 B1 discloses "Jitter Measuring Device And Method".

Yamaguchi et al. U.S. Patent 6,621,860 B1 discloses "Apparatus For And Method Of Measuring A Jitter".

Boerstler et al. U.S. Patent 6,384,649 B1 discloses "Apparatus And Method For Clock Skew Measurement".

Merrill U.S. Patent 5,003,256 discloses "Clock Skew Measurement Technique".

Taylor U.S. Patent 6,519,281 B1 discloses "Jitter Measurement".

Lloyd U.S. Patent 4,860,322 discloses "Anti-Clock Skew Distribution Apparatus".

Skelly et al. U.S. Patent 6,661,810 B1 discloses "Clock Skew Estimation And Removal".

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KCT

*Khanh Cong Tran*

*01/31/2005*

Examiner KHANH TRAN